

## CLAIMS

What we claim as our invention is:

1. A polymeric material which comprises at least one peptidomimetic selected from the group consisting of:

(Gly- $\Psi[(E)CH=C]XaaYaa$ )<sub>n</sub> (1A)

(Gly-Xaa- $\Psi[(E)CH=C]Yaa$ )<sub>n</sub> (1B)

(Gly-Xaa-Yaa- $\Psi[(E)CH=CH]$ )<sub>n</sub> (1C)

(Gly- $\Psi[(E)CH=C]Xaa\Psi[(E)CH=C]Yaa$ )<sub>n</sub> (2A)

(Gly-Xaa- $\Psi[(E)CH=C]Yaa\Psi[(E)CH=CH]$ )<sub>n</sub> (2B)

(Gly- $\Psi[(E)CH=C]XaaYaa\Psi[(E)CH=CH]$ )<sub>n</sub> (2C)

and

(Gly- $\Psi[(E)CH=C]Xaa\Psi[(E)CH=C]Yaa\Psi[(E)CH=CH]$ )<sub>n</sub> (3)

wherein Xaa and Yaa may be the same or different and represent a natural amino acid, Hyp or Flp;

n means an integer.

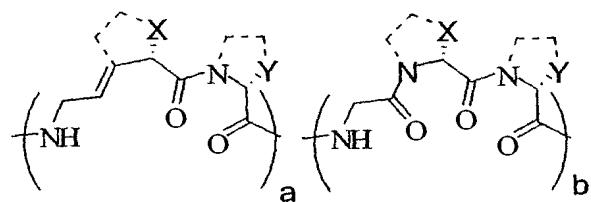
2. The polymeric material of claim 1, wherein n is 10 or more.

3. The polymeric material of claim 1, wherein the peptidomimetic comprises:

(Gly- $\Psi[(E)CH=C]XaaYaa$ )<sub>n</sub> (1A)

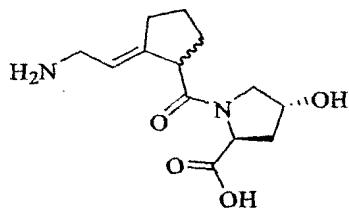
wherein Xaa is Pro and Yaa is Hyp.

4. The polymeric material of claim 1, comprising a block polymer as follows:

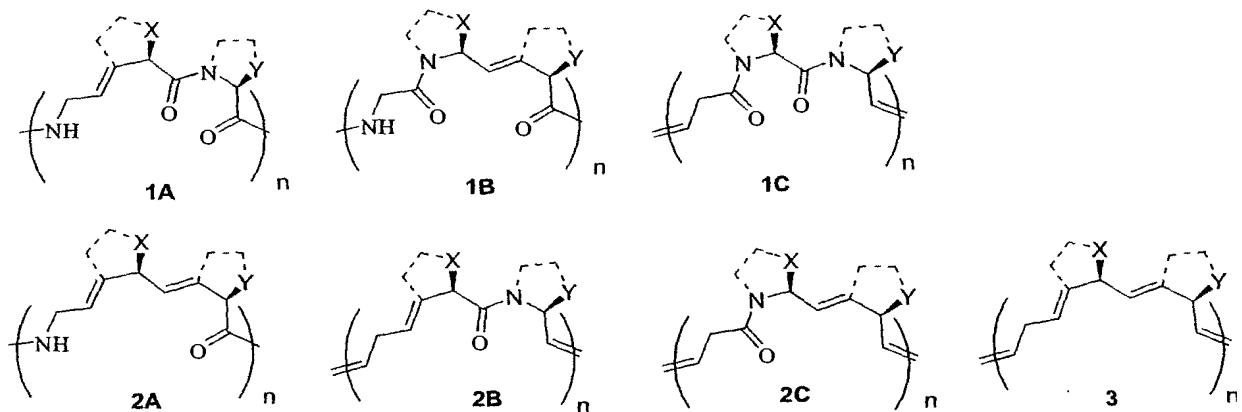


wherein a and b are integers between about 5 and 125, wherein a and b may be the same or different.

5. The polymeric material of claim 1, comprising a block copolymer of a peptidomimetic with a natural peptide.
6. The polymeric material of claim 1, comprising a monomer as follows:



7. The polymeric material of claim 1, the polymeric material mimicking collagen.
8. The polymeric material of claim 7, wherein the polymeric material is biocompatible and upon insertion into a region in a living patient where collagen at a previous time had been disposed, the inserted polymeric material provides at least one property of natural collagen.
9. A product comprising a polymeric material which is not naturally occurring, comprises alkene bonding and has a triple helix rope-like structure.
10. The product of claim 9, wherein the polymeric material comprises at least one selected from the group consisting of:



wherein n means an integer.

11. The product of claim 10, wherein n is 10 or more.
12. The product of claim 10, wherein the polymeric material has one or more selected from the group consisting of: greater stability than natural collagen, and greater collagenase-resistance than natural collagen; greater ability to fold than natural collagen.
13. The product of claim 10, implanted or injected into a living organism.
14. The product of claim 10, having biology purity suitable for use in a living human patient.
15. The product of claim 10, not capable of producing a problematic immunologic reaction when injected into living human patients.
16. A method of tissue replacement in a living organism, comprising: delivering into the living organism the product of claim 1 or claim 10.
17. A method of hip replacement, comprising: disposing in a living organism the product of claim 1 or claim 10.
18. A biocompatible adhesive formed by the product of claim 1 or claim 10.
19. A method of biomimeticization, comprising delivering into a living organism the product of claim 1 or claim 10.
20. A method of drug delivery, comprising: disposing in a living organism the product of claim 1 or claim 10 wherein the product comprises a drug.

21. A method of synthesizing collagen-like peptides, comprising polymerization of a H-Gly- $\Psi[(E)CH=C]$ -Pro-Hyp-OH monomer.
22. The synthesis method of claim 21, including polymerizing tripeptide units.
23. The synthesis method of claim 21, wherein a (Gly-Pro-Hyp)<sub>t</sub> polymer is synthesized wherein t is a number of repeating units of about 10 to 160.
24. The synthesis method of claim 21, wherein a polymer comprising (Gly-Pro-Hyp) repeating units and having molecular weight of about 40,000 is synthesized.
25. The polymeric material of claim 1, wherein the peptidomimetic comprises: (Gly- $\Psi[(E)CH=C]$ -Xaa-Yaa)<sub>n</sub>

(1A)

wherein Xaa is Pro and Yaa is Pro.